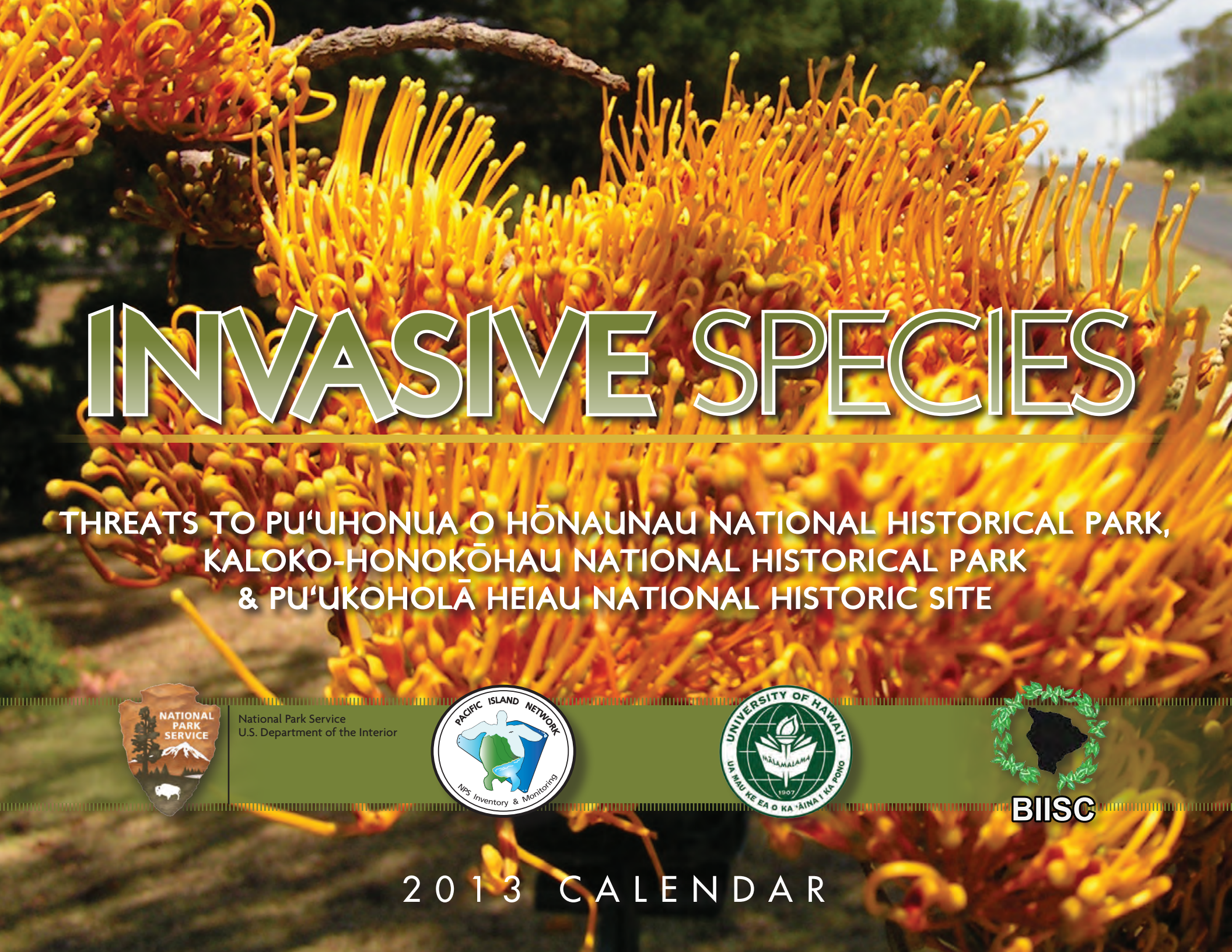


INVASIVE SPECIES

THREATS TO PU‘UHONUA O HŌNAUNAU NATIONAL HISTORICAL PARK, KALOKO-HONOKŌHAU NATIONAL HISTORICAL PARK & PU‘UKOHOLĀ HEIAU NATIONAL HISTORIC SITE

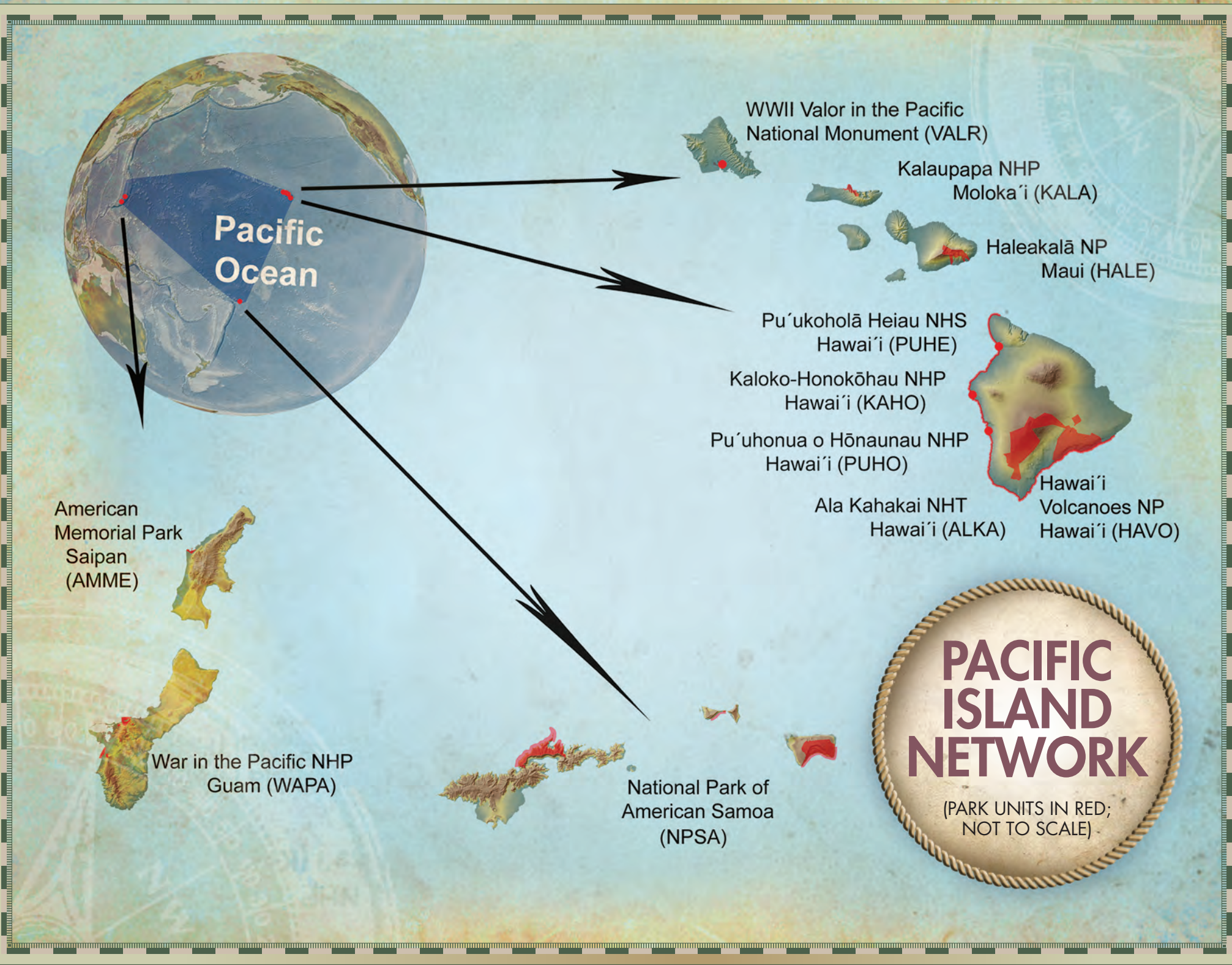
National Park Service
U.S. Department of the Interior

PACIFIC ISLAND NETWORK
NPS Inventory & Monitoring

UNIVERSITY OF HAWAI‘I
MĀLAMALAMA
UA MAU KE EA O KA ‘ĀINA I KA PONO
1907

BIISC

2013 CALENDAR


Pacific Ocean
WWII Valor in the Pacific National Monument (VALR)
Kalaupapa NHP Moloka´i (KALA)
Haleakalā NP Maui (HALE)
Pu´ukoholā Heiau NHS Hawai´i (PUHE)
Kaloko-Honokōhau NHP Hawai´i (KAHO)
Pu´uhonua o Hōnaunau NHP Hawai´i (PUHO)
Ala Kahakai NHT Hawai´i (ALKA)
Hawai´i Volcanoes NP Hawai´i (HAVO)
American Memorial Park Saipan (AMME)
War in the Pacific NHP Guam (WAPA)
National Park of American Samoa (NPSA)
PACIFIC ISLAND NETWORK
(PARK UNITS IN RED; NOT TO SCALE)

Invasive Plant Species:
a Threat to Our Islands

ISLAND ECOSYSTEMS are vulnerable to invasion because of the unique species and habitats that evolved in isolation from the rest of the world. Most nonnative plants introduced by people pose no significant threat to native ecosystems, but some nonnative species can establish, spread and permanently alter our coastlines and forests. Plants that become established and spread into native habitats are called invasive.

Invasive plants may reduce native plant diversity and abundance, alter vegetation structure, and can lead to significant economic and cultural costs. In Hawaii alone, invasive species are estimated to have cost $500 million through lost agriculture and property damage. Once established, invasive plants are difficult to control, making prevention and early detection our best hope for protecting our parks.

This calendar features 12 invasive plants. These species are likely to severely impact the native plant communities if they become established. **You can help stop the spread of invasive species by:**

- **being vigilant with new and unusual plants that you do not recognize, start by learning these 12 invaders**
- **cleaning boots, gear and vehicles to stop the spread of invasive seeds, especially in native plant communities**
- **planting and restoring native species and habitats**
- **properly disposing of compost, agricultural, and garden waste that may contain nonnative seeds**
- **never planting or transporting invasive species**

Please use the information in this calendar to help spread the word on the problems invasive species present to the park. An engaged, informed and alert park staff and public remains one of the best ways to detect and prevent the spread of invasive species, and protect our island home.

The Pacific Island Network Inventory and Monitoring Program assists national parks in locating nonnative plants as part of its mission to monitor selected park resources.

TO REPORT AN INVASIVE SPECIES:

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Pu'ukoholā Heiau National Historic Site:
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Hawai'i Volcanoes National Park:
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Pacific Island Network
Inventory & Monitoring Program
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Hawaii National Park, HI 96718
(808) 985-6185 phone
(808) 985-6111 fax
http://science.nature.nps.gov/im/units/pacn/

FOR MORE INFORMATION ON INVASIVE SPECIES:

Hawaii Ecosystems at Risk Project
www.hear.org
Hawaii-Pacific Weed Risk Assessment
www.hpwra.org
Hawaii Invasive Species Council
www.hawaiiinvasivespecies.org
Hawaii Early Detection Network
www.reportapest.org

Front Cover Photo:
Arthur Chapman
Silk oak (*Grevillea robusta*)

Back Cover Photo:
Macleay Grass Man
Broomsedge (*Andropogon virginicus*)

crown flower | small crown flower

Calotropis gigantea | *Calotropis procera*

Be on the lookout for this INVASIVE SPECIES

PHOTO: Forest & Kim Starr (UH)

► White and purple crown-shaped flowers are used in lei-making.

PHOTO: Forest & Kim Starr (UH)

▲ Rubbery leaves produce a milky white, latex sap. Kidney-shaped fruit are green when young and brown when mature.

CROWN FLOWER and **SMALL CROWN FLOWER** are difficult to tell apart. They both are small shrubs or trees that grow to 6-12'. All parts of the plants produce a milky white, latex sap when broken. Leaves are thick and waxy, grey-green, fuzzy beneath, rounded with a pointed tip, and have a slightly heart-shaped base (3-10" long by 2-5.5" wide). Leaves are arranged oppositely along the stem and both have white and purple crown-shaped flowers that are 1-2" in diameter (*C. gigantea*) or .8-1.2" in diameter (*C. procera*). Fruits are kidney-shaped (3-5" long) and green when young and brown when mature. Seeds are brown and flattened with tufts of silky hair attached to one end.

PHOTO: Forest & Kim Starr (UH)

crown flower, small crown flower

Calotropis gigantea, Calotropis procera

SPECIES TYPE & ORIGIN: Crown flower and small crown flower are shrubs native to West Africa and tropical Asia.

IMPACTS: These plants have a milky sap that contains poisonous "cardiac glycosides." The sap can irritate skin and ingestion leads to heart irregularities. They can grow in dense, single-plant stands that crowd out other plants. Crown flower is one of the top 10 plants reported on the Hawaii poison hotline.

LOCAL DISTRIBUTION & HABITAT: These plants have been introduced throughout the tropics. In Hawaii, they are sparingly naturalized from Kawaihae to Kailua-Kona on the Big Island. They thrive in disturbed areas like overgrazed pasture, roadsides, and abandoned lots and can grow in a variety of soil types, including beach front dunes and waterways.

DISPERSAL MECHANISM: Plants can reproduce by suckering and seeds, which are dispersed by wind, water, and animals. They can easily spread from intentional plantings.

CULTIVATION: Crown flower is intentionally cultivated for its crown-shaped flowers, which are popular for lei-making, and as a butterfly attractant. Small crown flower is promoted as a biofuel in some parts of the world. Both species have been classified as "High Risk" by the Hawaii-Pacific Weed Risk Assessment and should not be cultivated.

HOW TO HELP: Report potential sightings within Pu'uhonua o Hōnaunau National Historical Park:
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within Pu'ukoholā Heiau National Historic Site:
Ben Saldua Ben_Saldua@nps.gov
tel. 808-882-7218

January 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1 *New Year's Day*	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21 *Martin Luther King, Jr. Day*	22	23	24	25	26
27	28	29	30	31		

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red mangrove

Rhizophora mangle

Be on the lookout for this INVASIVE SPECIES

PHOTO: Forest & Kim Starr (UH)

◄ Pencil-shaped fruit propagules.

PHOTO: Forest & Kim Starr (UH)

▲ Distinctive arching prop roots (6-15' tall).

RED MANGROVE is a salt-tolerant aquatic tree that can grow 15-60' tall. It has thick leathery leaves that grow in an opposite arrangement. Leaves are dark green above, yellow-green below, and covered with black dots. Small flowers (~.4" long petals) grow in clusters of 2-3. Plants have arching prop roots (6-15' tall) and long pencil-shaped fruit propagules.

PHOTO: Forest & Kim Starr (UH)

red mangrove

Rhizophora mangle

SPECIES TYPE & ORIGIN: Red mangrove is a tree native to the coast from Florida to southern Brazil, western Africa from Senegal to Angola, and the western Pacific from New Caledonia to American Samoa.

IMPACTS: Mangrove infestations can form single species stands that have been found to reduce habitat quality for endangered Hawaiian waterbirds, reduce drainage in waterways, and obstruct shoreline access. It can also overgrow and destroy anchialine pools and Hawaiian archaeological sites, such as fishponds. Mangroves are a refuge for upside-down jellyfish (*Cassiopea andromeda*), which can be a nuisance to swimmers.

LOCAL DISTRIBUTION & HABITAT: Red mangrove was introduced to Hawaii on Moloka'i in 1902 and now grows along approximately 25% of the islands southern shoreline. It is widespread on Moloka'i and O'ahu and found in limited areas on Kaua'i, Lāna'i, Maui and the Big Island. Existing mangrove populations are being actively eradicated on the Big Island. Mangroves grow along shorelines, in estuaries and wetlands, and in brackish water at the mouth of streams or rivers.

DISPERSAL MECHANISM: Mangroves form propagules, which are fully developed young plants, on adult trees. Propagules can float over 50 miles and up to 1 year before taking root.

CULTIVATION: Red mangrove was introduced to Hawaii to prevent erosional run-off from agricultural fields. It has been classified as "High Risk" by the Hawaii-Pacific Weed Risk Assessment and should not be cultivated.

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February 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1	2 *Groundhog Day*
3	4	5	6	7	8	9
10	11	12	13 *Ash Wednesday*	14 *Valentine's Day*	15	16
17	18 *President's Day*	19	20	21	22	23
24	25	26	27	28		

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silk oak

Grevillea robusta

Be on the lookout for this
INVASIVE SPECIES

PHOTO: Rick J. Pelleg

◀ Feathery leaves (5-12" long) are white underneath.

PHOTO: Arthur Chapman

▲ Showy yellow flower.

SILK OAK (SILVER OAK) is a fast-growing tall tree (up to 70') with 5-12" long fern-like grey-green leaves. It has orange-yellow protea flowers (3-6") that have an upright horizontal shape and grow in clusters. Leathery seed pod capsules (.5") with a hair-like appendage on one end contain 1 or 2 winged seeds. Its leaves fall year-round and create a dense layer of litter underneath.

PHOTO: Forest & Kim Starr (UH)

silk oak

Grevillea robusta

SPECIES TYPE & ORIGIN: Silk oak is a tree native to eastern Australia.

IMPACTS: Silk oak can form single species stands that crowd out other vegetation. Chemicals released from the leaves and roots can inhibit the growth of surrounding plants. The sap and other parts of the tree can cause allergic contact dermatitis, much like poison ivy or oak.

LOCAL DISTRIBUTION & HABITAT: In Hawaii, over 2 million silk oak trees have been planted. It is now established on all islands in dry to semi-wet areas from sea level to 8,000'.

DISPERSAL MECHANISM: Silk oak produces prolific amounts of winged seeds, which are carried by the wind far beyond the parent plant.

CULTIVATION: Silk oak is grown as an ornamental and reforestation tree. It has been used since the 1800s as a shade tree for coffee and tea. It is used for woodworking, though the sawdust is allergenic. The Hawaii Department of Land and Natural Resources considers silk oak one of Hawaii's most invasive horticultural plants. The Hawaii Chapter of the American Society of Landscape Architects categorizes silk oak as a "do not plant" species.

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March 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1	2
3	4	5	6	7	8	9
10 *Daylight Savings Time Begins*	11	12	13	14	15	16
17 *St. Patrick's Day*	18	19	20 *Spring Begins*	21	22	23
24 *Palm Sunday*	25	26	27	28	29 *Good Friday*	30
31 *Easter*						

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Jerusalem thorn

Parkinsonia aculeata

Be on the lookout for this INVASIVE SPECIES

► Yellow flowers and feathery leaves that grow along flat ribbon-like stems.

PHOTO: Lalithamba

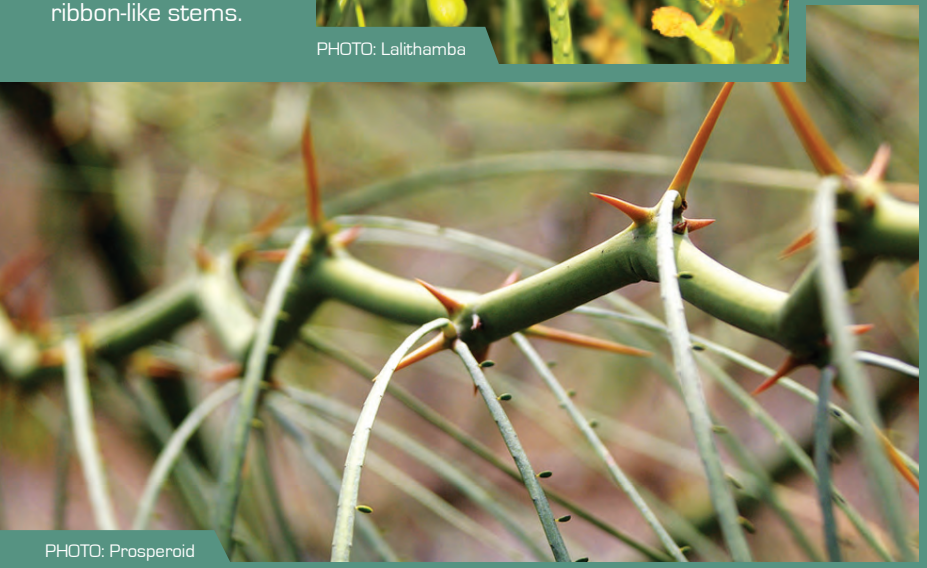

PHOTO: Prosperoid

▲ Zig-zag stems and 1-2" thorns.

JERUSALEM THORN is a shrubby thorny tree that grows to 9-30' tall. It has smooth green bark and thorns along its branches. Feathery leaves are formed by long flat ribbon-like stems measuring 10-16" in length with 22-30 pairs of small leaflets. Jerusalem thorn has small (1") yellow flowers with orange spots that hang in groups. This plant has green seed pods with brown or purple spots that range from 2-8" long.

PHOTO: Wendy Cutler

Jerusalem thorn

Parkinsonia aculeata

SPECIES TYPE & ORIGIN: Jerusalem thorn is a tree in the pea family. The full extent of Jerusalem thorn's native range is uncertain.

IMPACTS: Jerusalem thorn has been planted throughout the world as an ornamental and has since escaped from cultivation. Its distinctly shaped leaves, yellow flowers, weeping-like habit, drought tolerance, and ability to grow in a variety of soils, makes it an appealing ornamental. In Australia, Jerusalem thorn can form dense, thorny, impenetrable thickets along water courses and drainages.

LOCAL DISTRIBUTION & HABITAT: Jerusalem thorn is widely cultivated around the world and is known to have spread from initial plantings in California, Arizona, Florida, the main Hawaiian Islands, the West Indies, Australia, and Micronesia. On the Big Island, this plant has been found cultivated on one private property in Kealakekua Bay, where it was removed in 2009.

DISPERSAL MECHANISM: Jerusalem thorn seeds are dispersed via waterways and during flood conditions. It is also dispersed by animals that eat its seeds and humans who spread the plant long distances in landscaping.

CULTIVATION: Jerusalem thorn is a hardy species that is valued as an ornamental or shade tree. It has been used in Africa and Pakistan to revegetate desert regions. The Hawaii Chapter of the American Society of Landscape Architects categorizes Jerusalem thorn as a "do not plant" species. It has been classified as "High Risk" by the Hawaii-Pacific Weed Risk Assessment and should not be cultivated.

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April 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22 *Earth Day*	23	24	25	26 *Arbor Day*	27
28	29	30				

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physic nut

Jatropha curcas

Be on the lookout for this INVASIVE SPECIES

PHOTO: Forest & Kim Starr (UH)

◄ Small yellow-green flowers.

PHOTO: Forest & Kim Starr (UH)

▲ Fruits split open to reveal 2-3 black seeds.

PHYSIC NUT is a large shrub that can grow to 9' tall with dull green heart-shaped leaves (4-7.5") with wavy indented margins. Small yellow-green flowers are produced on the ends of branches, mostly hidden by foliage. It has thin green bark that produces large amounts of clear latex when broken or cut. Its dry round fruit (1-1.5") is green when young and brown when mature. Fruits split open to reveal 2-3 black seeds.

PHOTO: Immersia

physic nut

Jatropha curcas

SPECIES TYPE & ORIGIN: Physic nut is a shrub in the spurge family. It is native to the Caribbean region.

IMPACTS: Physic nut can escape cultivation and become a pest of pasture lands, disturbed areas, and natural forests. Plants contain allelopathic chemicals that can inhibit the growth of neighboring plants, and poisonous, strong purgatives that are a common cause of poisoning among people who ingest the fruits and seeds.

LOCAL DISTRIBUTION & HABITAT: Physic nut has been introduced throughout the tropics. In Hawaii, it has been planted as a crop throughout the Big Island, including in Kea'au, Hawi, Hāmākua, and Hilo. It has become naturalized near Kailua-Kona.

DISPERSAL MECHANISM: Physic nut can reproduce from seed and tuberous root suckering.

CULTIVATION: Physic nut is grown in many parts of the world as a biofuel and as hedges for fencing and foraging animals. Several parts of the plant are used in folk medicine in Africa. It has been classified as "High Risk" by the Hawaii-Pacific Weed Risk Assessment and should not be cultivated.

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May 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1 *May Day*	2	3	4
5	6	7	8	9	10	11
12 *Mother's Day*	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27 *Memorial Day*	28	29	30	31	

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ivy gourd

Coccinia grandis

Be on the lookout for this INVASIVE SPECIES

► Plants, sometimes known as "Thai spinach," are grown for edible fruit and shoots.

PHOTO: Forest & Kim Starr (UH)

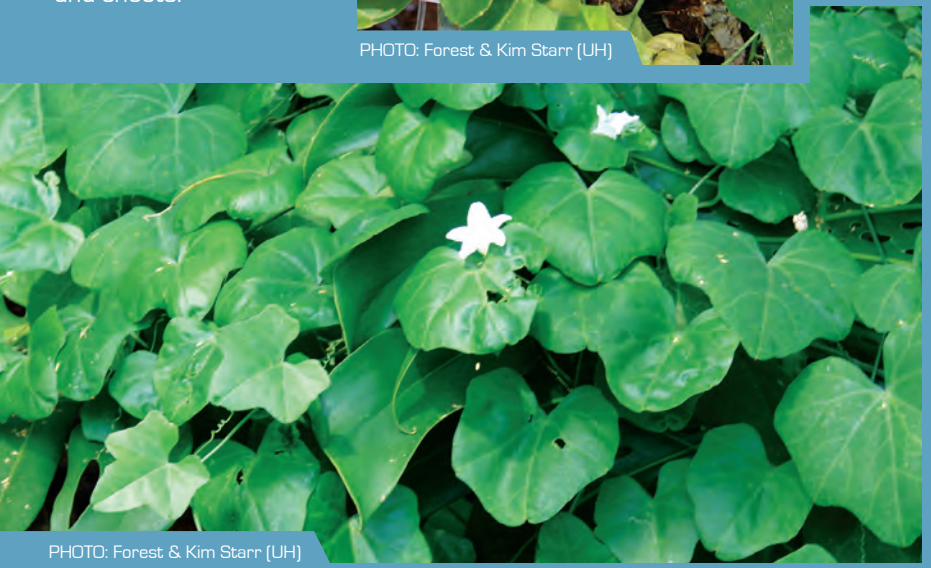

PHOTO: Forest & Kim Starr (UH)

▲ Leaves are variable in shape.

IVY GOURD is an aggressive vine. Its leaves are 2-3" long and variably shaped (sometimes deeply lobed). Flowers are white and star-shaped, up to 2" across, and have five petals. The fruits are smooth and green (1-3" long) with whitish stripes turning to a uniform crimson red when ripe.

PHOTO: Forest & Kim Starr (UH)

ivy gourd

Coccinia grandis

SPECIES TYPE & ORIGIN: Ivy gourd is a perennial herbaceous vine native to Africa, India, Asia, and Australia.

IMPACTS: Ivy gourd grows aggressively and can climb over trees and shrubs, and on fences and power lines. It can also cover archaeological sites, such as heiau (Hawaiian temple). If left unchecked, ivy gourd can form a dense canopy that quickly smothers its host plant or structure under a solid blanket of vines.

LOCAL DISTRIBUTION & HABITAT: Ivy gourd has been found on all Hawaiian Islands except Moloka'i. Ivy gourd is widespread on the Big Island in the Kailua-Kona area.

DISPERSAL MECHANISM: Ivy gourd is dispersed long distances by humans who cultivate the plant for food. This pest can also be dispersed unintentionally via the transport of plant material by humans. Very small pieces of stem or root can resprout. Ivy gourd seeds are spread by birds and rodents.

CULTIVATION: Ivy gourd is cultivated for its edible shoots, leaves, and fruits. It is a Hawaii state noxious weed and is illegal to plant or transport across the state. The Hawaii Department of Land and Natural Resources considers ivy gourd one of Hawaii's most invasive horticultural plants. The Hawaii Chapter of the American Society of Landscape Architects categorizes ivy gourd as a "do not plant" species. It has been classified as "High Risk" by the Hawaii-Pacific Weed Risk Assessment.

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June 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
2	3	4	5	6	7	8
9	10	11	12	13	14 *Flag Day*	15
16 *Father's Day*	17	18	19	20	21 *Summer Begins*	22
23	24	25	26	27	28	29
30						

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fountain grass

Cenchrus setaceus

Be on the lookout for this INVASIVE SPECIES

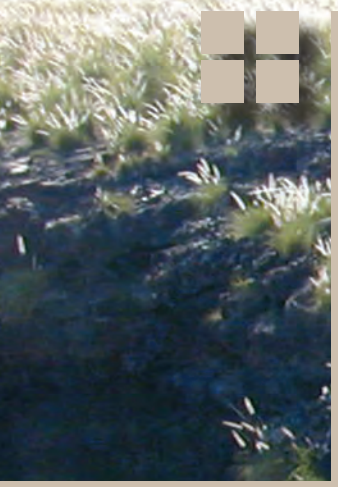

PHOTO: Forest & Kim Starr (UH)

► Leaves do not form flat "blades" like most leaves; they are long and round like wire.

PHOTO: Forest & Kim Starr (UH)

▲ Grows in clumps with long purple to yellow "spikes" that are the flower/seed heads.

FOUNTAIN GRASS is an erect perennial bunch grass that grows up to 3' high. The leaves are greenish-grey and have a slender, cylindrical, rolled shape. The small flowers are grouped together in an upright purple to rose-colored inflorescence that turns white as it seeds. Each inflorescence is 6-15" long.

PHOTO: Eric Guinther

fountain grass

Cenchrus setaceus

July 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2	3	4 *Independence Day*	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

SPECIES TYPE & ORIGIN: Fountain grass is a perennial bunch grass native to Africa.

IMPACTS: Originally introduced as an ornamental, fountain grass has become an aggressive, habitat-altering weed. It can degrade the quality of pasture lands, particularly in drier areas. Fountain grass is fire adapted and its dry leaves can increase the risk, intensity and longevity of fires. After a fire, it may resprout faster than native plants.

LOCAL DISTRIBUTION & HABITAT: Fountain grass has invaded many types of natural areas in Hawaii, including bare lava flows, grasslands, and range lands. On the Big Island, fountain grass covers at least 200,000 acres.

DISPERSAL MECHANISM: Fountain grass is dispersed through the horticultural trade as an ornamental grass. Seeds are also transported via wind, water, and by hitchhiking on vehicles, livestock, and humans.

CULTIVATION: Fountain grass is cultivated for its ornamental attributes. It is a Hawaii state noxious weed and is illegal to plant or transport across the state. It has been classified as "High Risk" by the Hawaii-Pacific Weed Risk Assessment.

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pampas grass

Cortaderia spp.

Be on the lookout for this
INVASIVE SPECIES

PHOTO: Maui Invasive Species Committee

► Dried, corkscrew-shaped leaves at base of plant.

PHOTO: Maui Invasive Soecies Committee

▲ 2-3' long flower plume.

PAMPAS GRASS is an erect giant bunch grass with long, slender, bright green, saw-toothed leaves. At its base are dried, corkscrew-shaped leaves. It has large showy flower plumes that extend 2-3' beyond the foliage. Two species of pampas grass are found in Hawaii, *Cortaderia selloana* and *C. jubata*. Both reach heights of 9-10' and have loosely clumped pinkish-white seed heads. They flower from July through November. Spent flower stalks are sometimes persistent for several years.

PHOTO: Maui Invasive Species Committee

pampas grass

Cortaderia spp.

SPECIES TYPE & ORIGIN: Pampas grass is a perennial bunch grass native to South America.

IMPACTS: Pampas grass grows rapidly, produces thousands of seeds per flower plume, and can accumulate large amounts of fire prone biomass. Seeds are viable for 4-6 months, but field evidence from Hawaii suggests viability could be greater. It can crowd out native species, impede access, degrade grazing lands, and create fire hazards.

LOCAL DISTRIBUTION & HABITAT: Pampas grass was introduced to Hawaii as an ornamental. On Maui, this plant has escaped cultivation and spread into pristine, upland native forests. It is found in pastures, gulches, yards, along road cuts. On the Big Island this plant has been removed from the Waimea Country Club and private homes in Volcano, Waimea, and Kona.

DISPERSAL MECHANISM: Pampas grass seeds are spread by wind and have been documented traveling up to twenty miles away from the parent plant. Humans also disperse seeds on contaminated gear. Flower plumes are sold for dried flower arrangements.

CULTIVATION: Pampas grass is used as an ornamental plant for landscapes and its flower plumes are used for decorations. Pampas is a Hawaii state noxious weed and is illegal to plant or transport across the state. It has been classified as "High Risk" by the Hawaii-Pacific Weed Risk Assessment.

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tel. 808-329-6881 x1224

within Pu'ukoholā Heiau National Historic Site:
Ben Saldua Ben_Saldua@nps.gov
tel. 808-882-7218

August 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

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broomsedge

Andropogon virginicus

Be on the lookout for this INVASIVE SPECIES

► A spathe subtends each group of 2-4 seed head racemes.

PHOTO: Macleay Grass Man

PHOTO: Forest & Kim Starr (UH)

▲ Base of plant is fan-shaped.

BROOMSEDGE is an erect perennial bunch grass that grows in dense tufts up to 40" tall. The upper third of the stalk is freely branching, giving a broom-like appearance. New growth is green, turning purplish to straw-colored when mature. The plant is dormant and brown during the wet season and grows during the dry season. Leaf-sheaths are flattened with silky hairs along the margins.

PHOTO: Macleay Grass Man

broomsedge

Andropogon virginicus

SPECIES TYPE & ORIGIN: Broomsedge is a perennial bunch grass native to the eastern United States.

IMPACTS: Broomsedge can persist in a wide variety of habitats, from wet boggy areas to dry areas. Infestations in pasture lands reduce the quality of forage. Allelopathic chemical properties found in this grass can inhibit other plant growth leading to monotypic stands. Dry grass materials are a major fire hazard.

LOCAL DISTRIBUTION & HABITAT: Broomsedge can now be found in California, Australia, French Polynesia, Midway, and on all major islands in Hawaii, where it readily becomes naturalized. Infestations are especially problematic on the islands of Oah'u, Moloka'i, Maui, and the Big Island. It is widespread on the Big Island and common in Hawai'i Volcanoes National Park.

DISPERSAL MECHANISM: Broomsedge seeds are wind dispersed and are adapted to catch on clothing and animal coats. Seeds are moved in contaminated soil and in mud on vehicles.

CULTIVATION: Broomsedge was first collected on the Big Island in 1924. It was most likely an unintentional introduction. It is a Hawaii state noxious weed and is illegal to plant or transport across the state. It has been classified as "High Risk" by the Hawaii-Pacific Weed Risk Assessment and should not be cultivated.

HOW TO HELP: Report potential sightings within Pu'uhonua o Hōnaunau National Historical Park:
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September 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2 *Labor Day*	3	4	5	6	7
8 *Grandparent's Day*	9	10	11	12	13	14
15	16	17	18	19	20	21
22 *Fall Begins*	23	24	25	26	27	28
29	30					

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Barbados gooseberry

Pereskia aculeata

Be on the lookout for this
INVASIVE SPECIES

PHOTO: David Midgley

◄ Daisy-like flowers grow in clusters.

PHOTO: Purves, M.

▲ Woody spine clusters grow on older vines.

BARBADOS GOOSEBERRY looks like a woody shrub when young and then matures into a spiny vine with branches up to 33' long. Unlike other cacti, it is not a succulent and has large leaves. Young plants have hooked thorns, while older plants grow clusters of large woody spines. It produces loose clusters of white to cream-colored fragrant flowers up to 2" in diameter that turn into round berries that are white, pink, yellow, orange or red.

PHOTO: Pilot Micha

Barbados gooseberry

Pereskia aculeata

SPECIES TYPE & ORIGIN: Barbados gooseberry is a shrub in the cactus family. It is native to the Caribbean and northern coast of South America.

IMPACTS: Barbados gooseberry can form dense, thorny, impenetrable thickets. It can overgrow and smother other plants and its spiny stems and dead plant litter can make areas inaccessible to hikers. This plant is a declared pest in South Africa and on the National Environmental Alert List for Australia.

LOCAL DISTRIBUTION & HABITAT: Barbados gooseberry was originally spread via the horticulture industry and has found its way to O'ahu, the Big Island, and Moloka'i, where it is problematic for people and other plants in the Hālawa Valley. This plant was removed from one site in Hawi on the Big Island in 2011 and has not been detected on the island since that time.

DISPERSAL MECHANISM: Birds and animals are attracted to Barbados gooseberry fruits and can spread the seeds long distances. Small pieces of the plant can regenerate, creating new infestations.

CULTIVATION: In the past, Barbados gooseberry had been planted in private gardens across Hawaii. It was also planted as temporary cattle fences in South Africa until its declaration as a significant weed. It has been classified as "High Risk" by the Hawaii-Pacific Weed Risk Assessment and should not be cultivated.

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tel. 808-882-7218

October 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2	3	4	5
6	7	8	9	10	11	12
13	14 *Columbus Day*	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31 *Halloween*		

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Chinese banyan

Ficus microcarpa

Be on the lookout for this INVASIVE SPECIES

► Leaves and fruits.

PHOTO: Tony Rodd

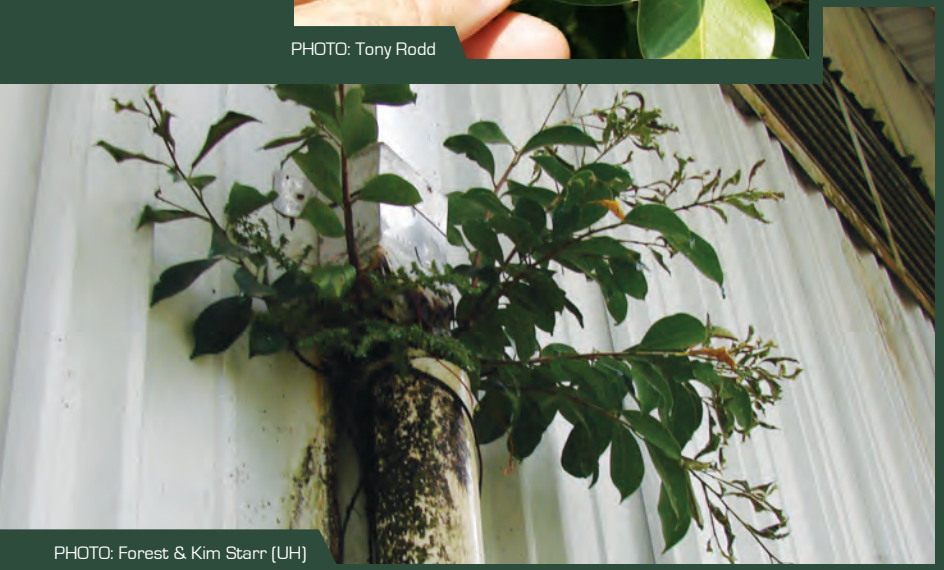

PHOTO: Forest & Kim Starr (UH)

▲ Chinese banyan can grow just about anywhere.

CHINESE BANYAN is a spreading climbing evergreen tree with numerous aerial roots that can form pillar-like structures. It grows to 65' tall and can be epiphytic, growing on top of trees and structures. The leaves are dark green and variable in shape (usually 2-3" long by 1-2" wide), often have mite damage, and grow in an alternate arrangement along the branch. Its bark is smooth and grey. Plants produce small fig-like fruits (.3" diameter) and no visible flowers.

PHOTO: Kabacchi

Chinese banyan

Ficus microcarpa

SPECIES TYPE & ORIGIN: Chinese banyan is a tree in the fig genus. It is native to eastern Asia and the Pacific Rim.

IMPACTS: Chinese banyan is a notorious invader in Florida, Bermuda, and Central and South America. It can grow in other trees, eventually strangling them. This tree can cause substantial damage to structures, establishing with very little substrate and posing a major threat to Hawaiian cultural and archaeological sites, including heiau (Hawaiian temple) and fish ponds.

LOCAL DISTRIBUTION & HABITAT: Chinese banyan has naturalized on all of the main Hawaiian Islands. It can grow in dry to moist open areas up to 3,000'.

DISPERSAL MECHANISM: Chinese banyan requires a specific wasp for pollination. This wasp has been introduced to Hawaii. Birds and animals feed on the fruits and disperse the small seeds long distances.

CULTIVATION: Chinese banyan is a popular ornamental in tropical regions of the world. It can be grown as a bonsai. The Hawaii Department of Land and Natural Resources considers Chinese banyan one of Hawaii's most invasive horticultural plants. It has been classified as "High Risk" by the Hawaii-Pacific Weed Risk Assessment and should not be cultivated.

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November 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1	2
3 *Daylight Saving Time Ends*	4	5	6	7	8	9
10	11 *Veteran's Day*	12	13	14	15	16
17	18	19	20	21 *Thanksgiving*	22	23
24	25	26	27	28 *Hanukkah Begins*	29	30

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rubber vine

Cryptostegia spp.

Be on the lookout for this INVASIVE SPECIES

PHOTO: Tatiana Gerus

◄ Paired seed pods are rigid and appear at the end of the stalk.

PHOTO: Jayesh Patil

▲ Funnel-shaped 5-petaled flowers.

RUBBER VINE is a woody self-supporting vine that can also be trained as a shrub. Stems, leaves, and seed pods produce a milky-white sap when broken. Glossy leaves (2.3-4" long by 1-2" wide) are arranged oppositely. The funnel-shaped 5-petaled flowers are white to light purple. Paired seed pods are rigid and appear at the end of the stalk. When dry, the pods brown and open up, releasing hundreds of plumed seeds.

PHOTO: Forest & Kim Starr (UH)

rubber vine

Cryptostegia spp.

SPECIES TYPE & ORIGIN: Rubber vine is a woody vine native to Madagascar.

IMPACTS: Rubber vine is a notorious invader and Weed of National Significance in Australia due to its ability to climb and cover trees, form dense thickets, and generally outcompete native vegetation. It is poisonous to cattle and horses, making it problematic for ranchers. The milky sap can cause burning rashes and blisters. When the plant and sap are dry, a powdery dust emerges that may cause coughing, nose swelling, and eyelid blisters.

LOCAL DISTRIBUTION & HABITAT: In its native range of Madagascar, rubber vine is found below 1,640′ along the western coastal plains. On the Big Island, rubber vine is cultivated sparingly in Kailua-Kona and Kawaihae, and has been found growing at an elevation of 2100′. It can invade many types of habitats, including wetlands, streams, agricultural lands, savannah/badlands, disturbed areas, and intact forests.

DISPERSAL MECHANISM: Rubber vine is distributed widely for use in landscaping. Seed pods contain hundreds of white seeds with hair-like propellers, which easily disperse in the wind. The seeds are also spread by movements of floodwater and mud, and by sticking to machinery and animals.

CULTIVATION: Rubber vine is cultivated in warmer regions of the world as an ornamental and for rubber production. The Hawaii Department of Land and Natural Resources considers rubber vine one of Hawaii's most invasive horticultural plants. It has been classified as "High Risk" by the Hawaii-Pacific Weed Risk Assessment and should not be cultivated.

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December 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3	4	5 *Hanukkah*	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21 *Winter Begins*
22	23	24	25 *Christmas*	26	27	28
29	30	31				

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TO REPORT AN INVASIVE SPECIES:

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FOR MORE INFORMATION ON INVASIVE SPECIES:

Hawaii Ecosystems at Risk Project
www.hear.org
Hawaii-Pacific Weed Risk Assessment
www.hpwra.org
Hawaii Invasive Species Council
www.hawaiiinvasivespecies.org
Hawaii Early Detection Network
www.reportapest.org

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Calendar Design: Hagadone Printing

▸ CROWN FLOWER, SMALL CROWN FLOWER

▸ RED MANGROVE

▸ SILK OAK

▸ JERUSALEM THORN

▸ PHYSIC NUT

▸ IVY GOURD

▸ FOUNTAIN GRASS

▸ PAMPAS GRASS

▸ BROOMSEDGE

▸ BARBADOS GOOSEBERRY

▸ CHINESE BANYAN

▸ RUBBER VINE